

AMENDMENTS TO THE CLAIMS

1.-27. (cancelled)

28. (new) An electroporation device, comprising:

an electronic array containing a plurality circuits forming a 2D array of unit cells;

a conducting electrode material having a first side in electrical contact with the 2D array of unit cells of the electronic array and a second side opposite the first side, wherein the second side of the conducting electrode material is suitable for plating a monolayer of cells or lipid vesicles to be electroporated and wherein the conducting electrode material is selectively conducting such that each of the unit cells of the electronic array is independently conductive therethrough; and

a fluid chamber defined by the second side of the conducting electrode material, a top disposed opposite the second side of the conducting electrode material and at least one sidewall separating the second side of the conducting electrode material and the top.

29. (new) The device of claim 28, wherein a first selective portion of the conducting electrode material operates as at least one anode and a second selective portion of the conducting electrode material operates as at least one cathode.

30. (new) The device of claim 29, wherein the first selective portion and the second selective portion are disposed in an geometry selected from the group consisting of pairs, center surround, and parallel columns.

31. (new) The device of claim 30, wherein the first selective portion and the second selective portion are repeated in an array across the conducting electrode material.

32. (new) The device of claim 28, wherein at least one selective portion of the conducting electrode material operates as only one of an anode and cathode and wherein the top of the fluid chamber includes an opposing electrode.

33. (new) The device of claim 28, wherein the conducting electrode material is a microwire glass.

34. (new) The device of claim 28, wherein the conducting electrode material is connected to the 2D array of unit cells via a plurality of spatially variant indium bumps, each corresponding to one of the 2D array of unit cells.

35. (new) The device of claim 28, wherein the top of the fluid chamber is at least partially transparent.

36. (new) The device of claim 28, wherein the fluid chamber includes a fluid inlet and a fluid outlet.

37. (new) The device of claim 36, wherein the fluid outlet further comprises a valve to prevent back flow.

38. (new) The device of claim 28, further comprising a pump in fluid communication with the fluid chamber.

39. (new) The device of claim 28, wherein the electronic array is fabricated on a silicon chip.

40. (new) The device of claim 28, wherein a first selective portion of the conducting electrode material electroporates a first selective area of the monolayer of cells or lipid vesicles and a second selective portion of the conducting electrode material electroporates a second selective area of the monolayer of cells or lipid vesicles.